

Amendments to the Claims

This listing of claims will replace all prior listings of claims in the application.

Listing of Claims

1.-6. (Canceled)

7. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 36, wherein a mixture of MgO, and MgAl₂O₄ is used as a constituent material of the substrate and the interconnectors.

8. (Original) A method of manufacturing a solid oxide fuel cell module according to claim 7, wherein the mixture of MgO, and MgAl₂O₄ is a mixture of MgO, and MgAl₂O₄, containing 20 to 70 vol. % of MgO.

9. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 36, wherein an yttria-stabilized zirconia expressed by chemical formula (Y₂O₃)_x(ZrO₂)_{1-x}, wherein x = 0.03 to 0.12, is used as a constituent material of the substrate and the interconnectors.

10. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 36, wherein a mixture of a mixture composed of MgO, and MgAl₂O₄, and an yttria-stabilized zirconia expressed by chemical formula (Y₂O₃)_x(ZrO₂)_{1-x}, wherein x = 0.03 to 0.12, is used as a constituent material of the substrate and the interconnectors.

11. (Original) A method of manufacturing a solid oxide fuel cell module according to claim 10, wherein the mixture of MgO, and MgAl₂O₄ is a mixture of MgO, and MgAl₂O₄, containing 20 to 70 vol. % of MgO.

12. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 36, wherein a constituent material of the substrate and the interconnectors is a material composed of Ni diffused in a range not more than 35 vol. %.

13. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 36, wherein a material composed mainly of Ni is used as a constituent material of the fuel electrode.

14. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 36, wherein a mixture of Ni and an yttria-stabilized zirconia expressed by chemical formula $(Y_2O_3)_x(ZrO_2)_{1-x}$, wherein $x = 0.03$ to 0.12 , with not less than 40 vol. % of Ni diffused in the mixture, is used as a constituent material of the fuel electrode.

15. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 36, wherein an yttria-stabilized zirconia expressed by chemical formula $(Y_2O_3)_x(ZrO_2)_{1-x}$, wherein $x = 0.05$ to 0.15 , is used as a constituent material of the electrolyte.

16. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 36, wherein a scandia-stabilized zirconia expressed by chemical formula $(Sc_2O_3)_x(ZrO_2)_{1-x}$, wherein $x = 0.05$ to 0.15 , is used as a constituent material of the electrolyte.

17. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 36, wherein an yttria-doped ceria expressed by chemical formula $(Y_2O_3)_x(CeO_2)_{1-x}$, wherein $x = 0.02$ to 0.4 , is used as a constituent material of the electrolyte.

18. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 36, wherein a gadolinia-doped ceria expressed by chemical formula $(\text{Gd}_2\text{O}_3)_x(\text{CeO}_2)_{1-x}$, wherein $x = 0.02$ to 0.4 , is used as a constituent material of the electrolyte.

19. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 36, wherein a material composed of a mixture of a glass and an electroconductive material is used as a constituent material of the interconnector.

20. (Original) A method of manufacturing a solid oxide fuel cell module according to claim 19, wherein the glass in the mixture of the glass and the electroconductive material is a glass with thermal expansion coefficient falling in a range of 8.0 to $14.0 \times 10^{-6}\text{K}^{-1}$.

21. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 19, wherein the glass in the mixture of the glass and the electroconductive material is a glass with a softening point falling in a range of 600 to 1000°C .

22. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 19, wherein the electroconductive material in the mixture of the glass and the electroconductive material is a metal.

23. (Original) A method of manufacturing a solid oxide fuel cell module according to claim 22, wherein the metal is at least one kind of metal selected from the group consisting of Pt, Ag, Au, Ni, Co, W, and Pd.

24. (Original) A method of manufacturing a solid oxide fuel cell module according to claim 22, wherein the metal is an alloy containing Ag.

25. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 19, wherein the electroconductive material in the mixture of the glass and the electroconductive material is an electroconductive oxide.

26. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 25, wherein the electroconductive oxide is a perovskite-type ceramics composed of not less than two elements selected from the group consisting of La, Cr, Y, Ce, Ca, Sr, Mg, Ba, Ni, Fe, Co, Mn, Ti, Nd, Pb, Bi, and Cu.

27. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 25, wherein the electroconductive oxide is an oxide expressed by chemical formula $(Ln, M)CrO_3$, wherein Ln refers to lanthanoids and M refers to Ba, Ca, Mg, or Sr).

28. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 25, wherein the electroconductive oxide is an oxide expressed by chemical formula $M(Ti_{1-x} Nb_x)O_3$, wherein M refers to at least one element selected from the group consisting of Ba, Ca, Li, Pb, Bi, Cu, Sr, La, Mg, and Ce, $x = 0$ to 0.4).

29. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 19, wherein the electroconductive material content of the mixture of the glass and the electroconductive material is not less than 30 vol. % of the mixture.

30. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 19, wherein the mixture of the glass and the electroconductive material is subjected to heat treatment at not higher than the melting point of the electroconductive material after the mixture is applied between the fuel electrode of one of the adjacent cells, and the air electrode of the other cell.

31. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 36, wherein only portions of the interconnector connecting the fuel electrode of one of the adjacent cells with the air electrode of the other cell, in contact with the fuel electrode, and the electrolyte, respectively, are formed of a material composed mainly of Ag.

32. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 36, wherein only portions of the interconnector connecting the fuel electrode of one of the adjacent cells with the air electrode of the other cell, in contact with the fuel electrode, and the electrolyte, respectively, are formed of a material composed of one kind or not less than two kinds of material selected from the group consisting of Ag, Ag solder, and a mixture of Ag and the glass.

33. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 36, wherein only portions of the interconnector connecting the fuel electrode of one of the adjacent cells with the air electrode of the other cell, in contact with the fuel electrode, and the electrolyte, respectively, are formed of an electroconductive oxide.

34. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 36, wherein an

oxide material containing Ti is used as a constituent material of the interconnector connecting the fuel electrode of one of the adjacent cells with the air electrode of the other cell.

35. (Previously Presented) A method of manufacturing a solid oxide fuel cell module according to claim 34, wherein the oxide material containing Ti is a material expressed by chemical formula $M(Ti_{1-x} Nb_x)O_3$, wherein M refers to at least one element selected from the group consisting of Ba, Ca, Pb, Bi, Cu, Sr, La, Li, and Ce, $x = 0$ to 0.4.

36. (Currently Amended) A method of manufacturing a solid oxide fuel cell module made up of a plurality of cells provided adjacent to one another and electrically connected in series by an interconnector provided therebetween, each cell comprising a fuel electrode, an electrolyte and an air electrode sequentially formed on a surface of a substrate having an internal fuel flow path provided therein, at least the surface of the substrate in contact with the cells and interconnectors being electrically insulating, said method comprising the steps of:

providing respective fuel electrodes and respective electrolytes on the surface of the substrate;

co-sintering the respective fuel electrodes and respective electrolytes;

providing a respective first part of the respective interconnectors having a density that is not less than 90% of the theoretical density of the interconnector material or that will have a density of not less than 90% of the theoretical density of the interconnector material after sintering in contact with the respective fuel electrodes and the respective electrolytes;

forming respective air electrodes on the respective electrolytes; and

electrically connecting the respective electrodes with the respective first parts of the respective interconnectors

via respective second parts of the interconnectors which may have a density less than the respective first parts.

37. (Currently Amended) A method of manufacturing a solid oxide fuel cell module made up of a plurality of cells provided adjacent to one another and electrically connected in series by an interconnector provided therebetween, each cell comprising a fuel electrode, an electrolyte and an air electrode sequentially formed on a surface of a substrate having an internal fuel flow path provided therein, at least the surface of the substrate in contact with the cells and interconnectors being electrically insulating, said method comprising the steps of:

providing respective fuel electrodes and respective electrolytes on the surface of the substrate;

co-sintering the substrate, the respective fuel electrodes and the respective electrolytes;

providing a respective first part of the respective interconnectors having a density that is not less than 90% of the theoretical density of the interconnector material or that will have a density of not less than 90% of the theoretical density of the interconnector material after sintering in contact with the respective fuel electrodes and the respective electrolytes;

forming respective air electrodes on the respective electrolytes; and

electrically connecting the respective air electrodes with the respective first parts of the respective interconnectors via respective second parts of the respective interconnectors which may have a density less than the respective first parts.

38. (Currently Amended) A method of manufacturing a solid oxide fuel cell module made up of a plurality of cells provided adjacent to one another and electrically connected in series by an interconnector provided therebetween, each cell

comprising a fuel electrode, an electrolyte and an air electrode sequentially formed on a surface of a substrate having an internal fuel flow path provided therein, at least the surface of the substrate in contact with the cells and interconnectors being electrically insulating, said method comprising the steps of:

providing respective fuel electrodes, respective electrolytes and respective interconnectors on the surface of the substrate, a respective first part of the respective interconnectors having a density that is not less than 90% of the theoretical density of the interconnector material or that will have a density of not less than 90% of the theoretical density of the interconnector material after sintering in contact with the respective fuel electrodes and the respective electrolytes;

co-sintering the respective fuel electrodes, respective electrolytes and respective interconnectors;

forming respective air electrodes on the respective electrolytes; and

electrically connecting the respective air electrodes with the respective first parts of the respective interconnectors via respective second parts of the respective interconnectors which ~~may~~—have a density less than the respective first parts.

39. (Currently Amended) A method of manufacturing a solid oxide fuel cell module made up of a plurality of cells provided adjacent to one another and electrically connected in series by an interconnector provided therebetween, each cell comprising a fuel electrode, an electrolyte and an air electrode sequentially formed on a surface of a substrate having an internal fuel flowpath provided therein, at least the surface of the substrate in contact with the cells and interconnectors being electrically insulating, said method comprising the steps of:

providing respective fuel electrodes, respective electrolytes and respective interconnectors on the surface of the substrate, a respective first part of the respective interconnectors having a density that is not less than 90% of the theoretical density of the interconnector material or that will have a density of not less than 90% of the theoretical density of the interconnector material after sintering in contact with the respective fuel electrodes and the respective electrolytes;

co-sintering the substrate, the respective fuel electrodes, respective electrolytes and respective interconnectors;

forming respective air electrodes on the respective electrolytes; and

electrically connecting the respective air electrodes with the respective first parts of the respective interconnectors via respective second parts of the respective interconnectors which may have a density less than the respective first parts.

40. (Currently Amended) A method of manufacturing a solid oxide fuel cell module made up of a plurality of cells provided adjacent to one another and electrically connected in series by an interconnector provided therebetween, each cell comprising a fuel electrode, an electrolyte and an air electrode sequentially formed on a surface of a substrate having an internal fuel flow path provided therein, at least the surface of the substrate in contact with the cells and interconnectors being electrically insulating, said method comprising the steps of:

providing respective fuel electrodes on the surface of the substrate;

providing a respective first part of the respective interconnectors having a density that is not less than 90% of the theoretical density of the interconnector material or that will have a density of not less than 90% of the theoretical

density of the interconnector material after sintering in contact with the respective fuel electrodes;

providing the respective electrolytes on the respective fuel electrodes;

co-sintering the respective interconnectors, the respective fuel electrodes and the respective electrolytes;

forming respective air electrodes on the respective electrolytes; and

electrically connecting the respective air electrodes with the respective first parts of the respective interconnectors via respective second parts of the respective interconnectors which may have a density less than the respective first parts.

41. (Currently Amended) A method of manufacturing a solid oxide fuel cell module made up of a plurality of cells provided adjacent to one another and electrically connected in series by an interconnector provided therebetween, each cell comprising a fuel electrode, an electrolyte and an air electrode sequentially formed on a surface of a substrate having an internal fuel flow path provided therein, at least the surface of the substrate in contact with the cells and interconnectors being electrically insulating, said method comprising the steps of:

providing respective fuel electrodes on the surface of the substrate;

providing a respective first part of the respective interconnections having a density that is not less than 90% of the theoretical density of the interconnector material or that will have a density of not less than 90% of the theoretical density of the interconnector material after sintering in contact with the respective fuel electrodes;

providing the respective electrolytes on the respective fuel electrodes;

co-sintering the respective interconnectors, the respective fuel electrodes and the respective electrolytes;

forming respective air electrodes on the respective electrolytes; and

electrically connecting the respective air electrodes with the respective first parts of the respective interconnectors via respective second parts of the respective interconnectors which ~~may~~—have a density less than the respective first parts.

42.-47. (Canceled)